

REMARKS/ARGUMENTS

Claims 1-4, 6-8, 10, and 12-15 are pending. Editorial revisions have been made to improve the clarity of the claims. Claim 7 has been amended to incorporate limitations of Claim 9 and Claim 10 has been amended to incorporate limitations of Claim 11. Accordingly, the Applicants do not believe that any new matter has been added.

Rejection—35 U.S.C. §102(e)

Claims 7, 8, 10 and 15 were rejected under 35 U.S.C. 102(e) as being anticipated by Sekino et al., 2002/0164531. Sekino is not prior art in view of the present application's foreign priority dates of March 28, 2001 or September 27, 2001.

Moreover, Sekino et al. do not disclose with sufficient specification, or suggest, an aqueous electrolyte with a viscosity ranging from 7 to 30,000 cP and the functional properties of the aqueous electrolyte of the present invention. The aqueous electrolyte of the present invention has the following characteristics:

- (1) the non-aqueous liquid electrolyte of this invention is not a gel but fluid, and
- (2) the degree of viscosity of fluid is in the range of 7cP to 30000cP.

While a gel electrolyte may help prevent leakage, the disadvantages of electrolyte gels are disclosed on pages 2 and 3 of the specification. These disadvantages include (a) the gel prevents movement of the electrolyte and remarkably reduces ion conductivity compared to liquid electrolytes, (b) gel contact with the electrodes will lessen as compared with a liquid and this increases resistance at the electrode interface and deteriorates the discharge characteristics of a battery containing the electrolyte, (c) gel electrolytes are often inhomogeneous and can considerably deform the during charge/discharge cycles and swell the outer packaging.

On the other hand, the aqueous electrolyte of the present invention demonstrates the following effects:

- (1) it prevents leakage of liquid electrolyte,
- (2) there is no deviation and no heterogeneity of liquid electrolyte, and
- (3) it retains high ion conductivity under normal conditions.

Sekino et al. discloses a solution of (EC)+(PC)+(BL)+crown (denotes 12-crown-4).

However, the degree of viscosity 25°C of these substances is as follows.

(EC): 1.86

(PC): 2.53

(BL): 1.75

Crown: 1.6

Even if these components are mixed together, they do not form an aqueous electrolyte having a degree of viscosity of 3 or more cP. As described on page 2, lines 5-10, of the specification such a low viscosity electrolyte leaks out of a hermetically sealed container and the electrode deforms after charge/discharge cycles to largely swell its outer packaging.

Accordingly, the Applicants respectfully request that this rejection now be withdrawn.

Rejection—35 U.S.C. §102(e)/103(a)

Claims 1-6, 9, and 11-14 were rejected under 35 U.S.C. 102(e) as being anticipated by, or in the alternatively, under 35 U.S.C. 103(a) as being unpatentable over, Sekino et al., 2002/0164531. Sekino is not prior art in view of the present application's foreign priority dates of March 28, 2001 or September 27, 2001. As discussed above, Sekino do not disclose with sufficient specificity or suggest the aqueous electrolytes of the present invention.

Accordingly, the Applicants respectfully request that this rejection be withdrawn.

Rejection—35 U.S.C. §102(e)/103

Claims 7, 8, 10 and 15 were rejected under 35 U.S.C. 102(e) as being anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over, Skotheim et al., U.S. Patent No. 6,482,545. Skotheim does not disclose with sufficient specification, or suggest the aqueous electrolyte of the present invention for the following reasons.

Skotheim et al. describe that multifunctional monomer is mixed in nonaqueous solvent. Although this monomer exists as a monomer during normal operation, it is rapidly polymerized when the electrolyte is heated to a temperature greater than 100°C. This polymerizing increases the viscosity and the internal electric resistance of the electrolyte and then improves the safety of a cell against internal short circuits and overcharge and overdischarge conditions. Such monomers and the polymerizing cannot improve the characteristics of the electrolyte under normal conditions. Accordingly, the Applicants respectfully request that this rejection be withdrawn.

CONCLUSION

In view of the above amendments and remarks, the Applicants respectfully request reconsideration of the rejections of record and submit that this application is now in condition for allowance. Early notification to that effect is earnestly solicited.

Respectfully submitted,

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